Abstract

The present invention discloses a data transmission apparatus and method for transmitting data between physical layer side device and network layer device, which encapsulating a novel LAPS framing-de-framing into SPE/VC of a HDLC-like frame using a variable SAPI value. The LAPS encapsulation consists of the start Flag Sequence, address field (SAPI, Service Access Point Identifier), control field (0x03), Information field (Ipv4, Ipv6, or PPP protocol data unit), FCS (Frame check sequence) and the ending Flag Sequence, or consists of the start Flag, Address field, Control field, SAPI field (two octets), Information field, FCS field and the ending Flag Sequence. The Flag Sequence (0x7E) identifies the beginning/end of a LAPS frame. The present invention can be used to adapt Internet/Intranet to telecommunication infrastructure, and can be applied to network devices such as core and edge routers, switch devices, IP based network accessing equipment, line cards, and interfacing units used in high speed, e.g. Gigabit applications, for adapting IP directly to SDH/SONET or simplified SDH/SONET, or other physical layer devices.